EXECUTIVE SUMMARY

The Lake Odessa Habitat Rehabilitation and Enhancement Project (HREP) is located 15 miles south of Muscatine, Iowa, on the right descending bank of the Mississippi River between river miles (RM) 434.5 and 441.5. The project lies in Louisa County, Iowa and encompasses the federally owned lands between the Iowa River on the south and Michael Creek on the north. All project lands are in Federal ownership and are managed by the U.S. Fish and Wildlife Service (USFWS) as part of the Mark Twain National Wildlife Refuge Complex. The USFWS has granted management of the project's lower half to the Iowa Department of Natural Resources (IDNR) through a cooperative agreement.

The Lake Odessa area was originally leveed off for agricultural purposes in 1913. Active wildlife management began in the mid-1950s with efforts to manipulate water levels to promote vegetative growth and provide high quality resting and feeding areas for migratory waterfowl. Levee overtopping and generally inadequate water level management capabilities often compromised these efforts. While Lake Odessa has traditionally had high fall duck and geese populations and significant duck production, levee breaks have resulted in frequent losses of emergent aquatic vegetation and mast trees when flooding is prolonged. Sedimentation from the flood events has decreased deep aquatic habitat, which reduces circulation of oxygenated water and increases the possibility of fish kills.

The goals of the proposed project are to restore and protect wetland, terrestrial, and aquatic habitat. The objectives identified to meet these goals were: (1) reduce forest fragmentation; (2) increase bottomland hardwood diversity; (3) enhance migratory bird habitat; (4) restore sand prairie; (5) increase habitat for overwintering fish; (6) provide safe areas for developing fish; (7) protect habitat features; and (8) protect archeological sites.

The following enhancement features, shown in Figure ES-1, page ES-4, and their associated plans were considered to achieve the project goals and objectives:

1. Moist Soil Unit (MSU) Enhancement
    - No action
    - Enhance water level management capability at Field 4 & 5, Field 21, and MSU 20.
    - Enhance water level management capability at Unit 2.
    - Enhance water level management capability at Fox Pond.
    - Dredge access channels to Swarms and Bebee Ponds.
    - Enhance water level management capability at IDNR MSU.

2. Fisheries Enhancement
    - No action
    - Dredge 1,490- x 751-foot area in Lake Odessa.
    - Dredge a 5,158-foot channel in Goose Pond.
    - Dredge a 6,040-foot channel between Yankee and Blackhawk Chutes.
    - Dredge access channels to Swarms and Bebee Ponds.

3. Mast tree planting
   - No action
   - Restore and improve the bottomland hardwood forest by planting 27 acres of mast trees at Sites A and B.
   - Restore and improve the bottomland hardwood forest by planting 26 acres of mast trees at Site C.
   - Restore and improve the bottomland hardwood forest by planting 40 acres of mast trees at Site D.

4. Levee Restoration
   - No action
   - Restore perimeter levee crown and interior levee side slopes, construct a spillway and wing dam, and protect archeological sites.

5. Sand Prairie Planting
   - No action
   - Plant a 36-acre field with sand prairie grasses and forbs.

6. Fish Nursery
   - No action
   - Replace a water control structure to allow for fish passage.

Evaluation of the project enhancement features and construction options was accomplished using the Wildlife Habitat Appraisal Guide (WHAG) and annualization of outputs and costs. The WHAG evaluation methodology quantifies habitat output in the form of habitat units (HUs) that are used in conjunction with project cost data and functional life expectancy to compare the construction options of the proposed enhancement features. This incremental analysis identifies which combinations of enhancement features would be both cost efficient and cost effective. This analysis also shows the changes in cost for increasing levels of environmental output.

The recommended plan—shown on Figure ES-1—includes:

(1) enhancing water level management capability at Field 4 & 5, Field 21, MSU 20, Unit 2, Fox Pond, and IDNR MSU, as well as dredging access to Swarms and Bebee Ponds;

(2) fisheries enhancement dredging in Lake Odessa, Goose Pond, Yankee/Blackhawk Chutes, and Swarms and Bebee Ponds;

(3) mast tree planting at Sites A through D;

(4) levee restoration;

(5) sand prairie planting; and

(6) fish nursery construction.

The benefit of each feature listed above is as follows:

(1) Enhancing water level management capability will provide more moist soil habitat, greater vegetation diversity and growth, and reliable food supplies to migratory waterfowl.

(2) Fisheries enhancement dredging will create areas of deeper water and/or access to deeper water for overwintering fish.

(3) Mast tree planting will improve the quality and quantity of forest habitat by reintroducing mast-producing species to a forest community increasingly dominated by silver maple and cottonwood.

(4) Levee restoration will provide reliable flood damage protection, reduce flood damages and levee failures, and protect archeological sites from further erosion.

(5) The sand prairie planting will increase habitat complexity and provide feeding and nesting opportunities for a wide variety of wildlife.

(6) The fish nursery will allow fry to be reared to the fingerling stage in a predator-free environment.

Implementation of the recommended plan will increase the quality and quantity of preferred habitats at this location. The project outputs meet site management goals and objectives and support the goals and objectives of the Upper Mississippi River System - Environmental Management Program (UMRS-EMP), the North American Waterfowl Management Plan, and the Partners in Flight Program.

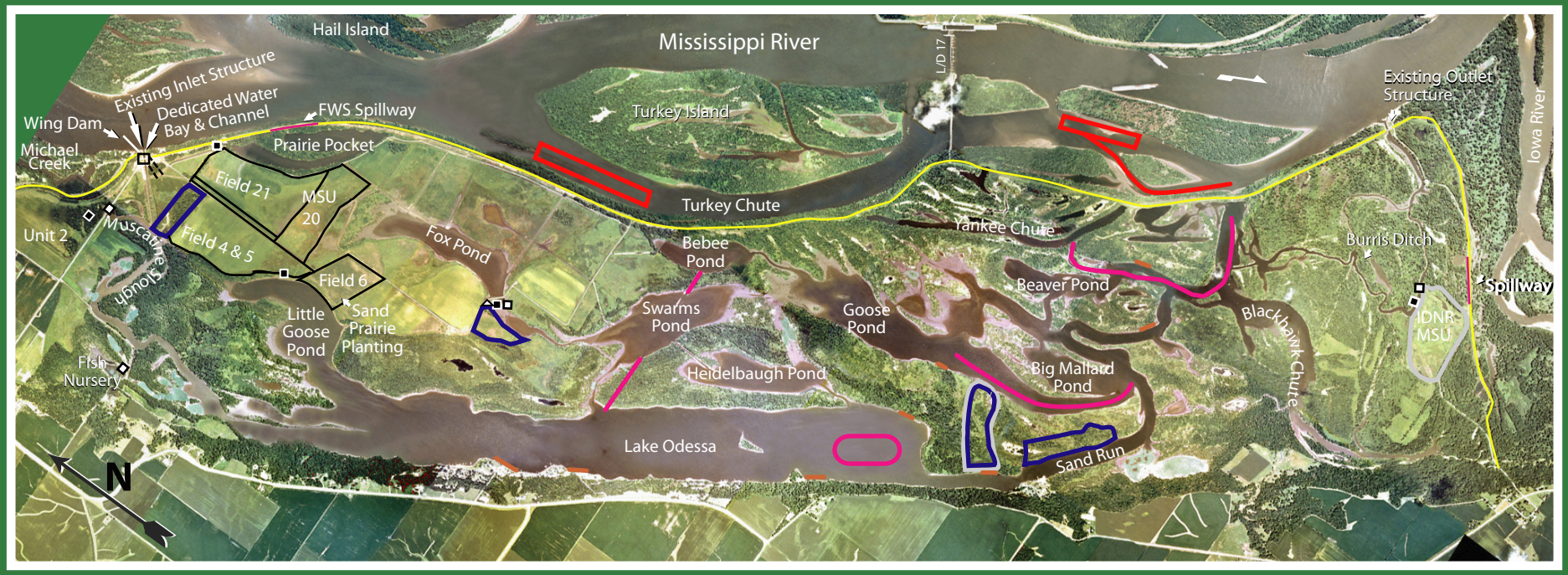
Section 906(e) of the 1986 Water Resources Development Act (WRDA) specifies that first cost funding for enhancement features "located on lands managed as a national wildlife refuge" will be 100 percent Federal. All Lake Odessa project features will be located on federally-owned lands managed through a cooperative agreement with the U.S. Fish and Wildlife Service (USFWS), the Federal project sponsor. Per Section 107(b) of the 1992 WRDA, the USFWS will accomplish project operation and maintenance at an estimated average annual cost of $63,176. The Iowa Department of Natural Resources (IDNR) is the non-Federal project sponsor.

The U.S. Army Corps of Engineers would be responsible for the Federal share of any mutually agreed upon major rehabilitation of the project that exceeds the annual operation and maintenance requirements identified in the final Definite Project Report (DPR) and that is needed as a result of specific storm or flood events. Major rehabilitation of the project is not included in the project cost estimate.

The District Engineer has reviewed the project outputs and determined that implementation of the selected plan is justified and in the Federal interest. Therefore, the Rock Island District Engineer recommends construction approval for the Lake Odessa Habitat Rehabilitation and Enhancement Project at an estimated Federal expense of $11,361,499. The total Federal cost estimate, including general design and construction management, is $14,818,648.

UMRS EMP

Figure ES-1
LAKE ODESSA
Project Location Map



LEGEND

- Restore Perimeter Levee
- Mast Tree Planting
- Dredged Material Placement Site
- Excavate Channel/Deep Holes
- Hydraulic Dredging Borrow Site
- Archeological Site Protection
- Portable Pump and/or Pad
- Replace / New Water Control Structure
- New Pump Station

0 ½ mile 1 mile
Scale